

A thick black L-shaped frame is positioned around the text. It starts at the top left, goes right, then down, then right again, and finally down to the bottom right corner.

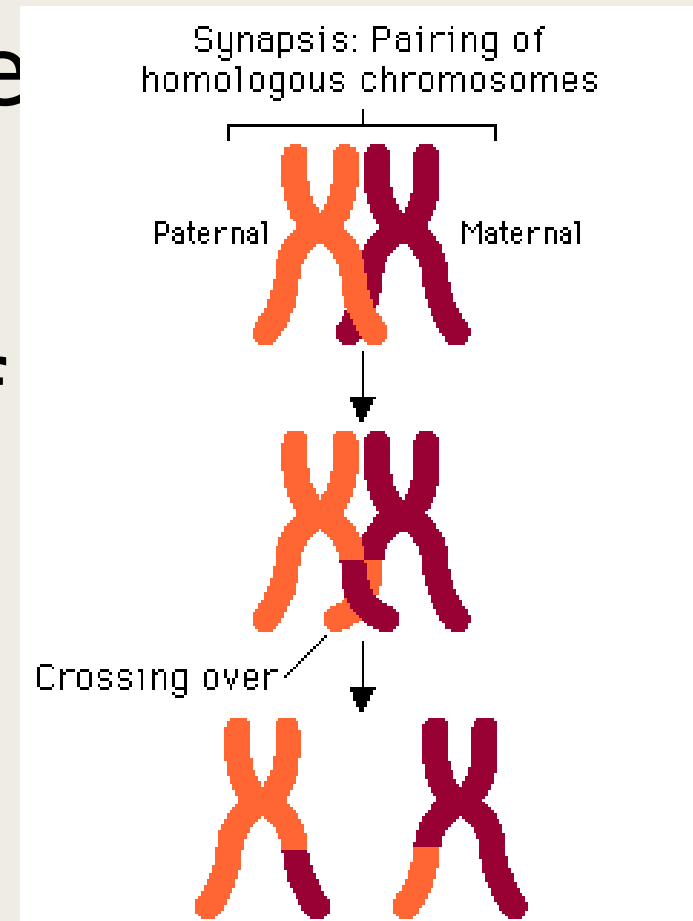
CHROMOSOMAL MUTATIONS

Chromosomal mutations

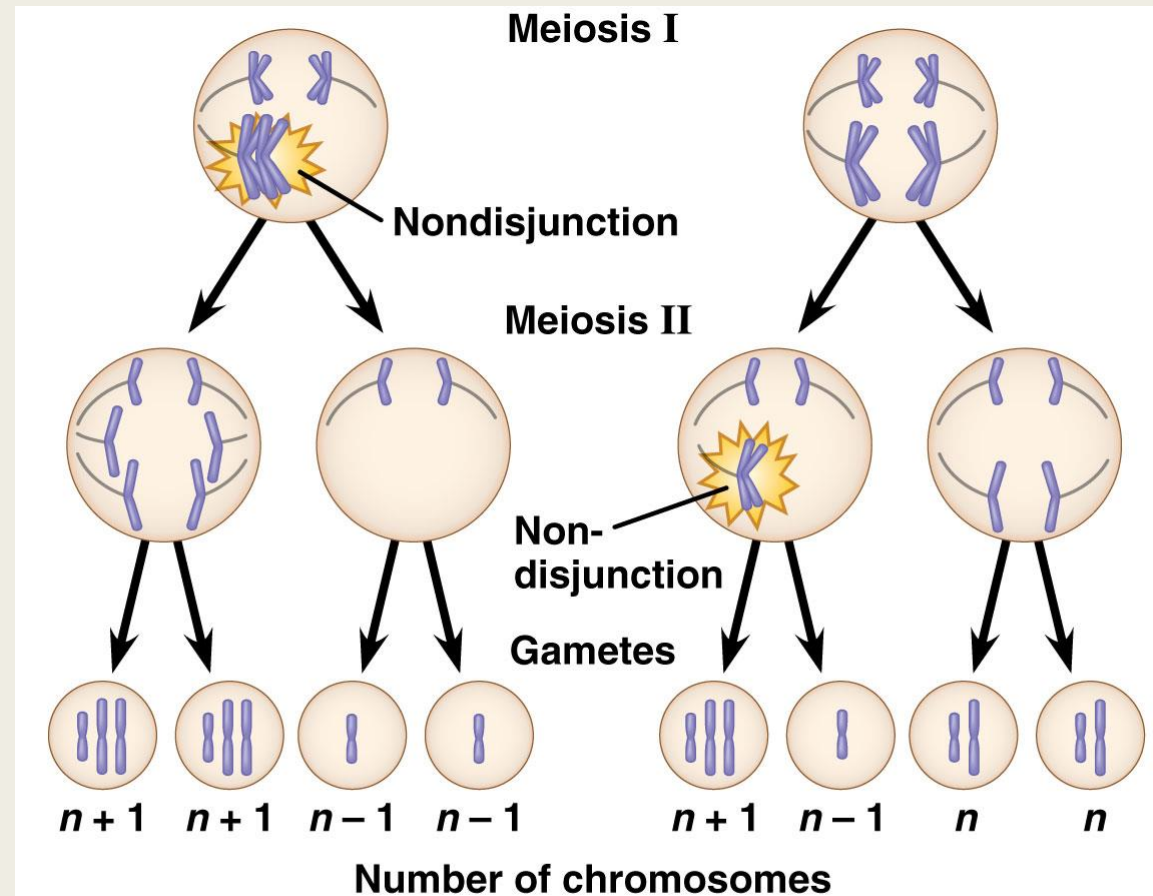
- Chromosomal mutations involve changes in the number or structure of chromosomes.
- Occurs during crossing over.

Crossing Over

- **Crossing over** - the exchange of genetic material between homologous pairs of chromosomes



Nondisjunction: chromosomes fail to separate properly in Meiosis I or Meiosis II



(a) Nondisjunction of homologous chromosomes in meiosis I

(b) Nondisjunction of sister chromatids in meiosis II

Nondisjunction

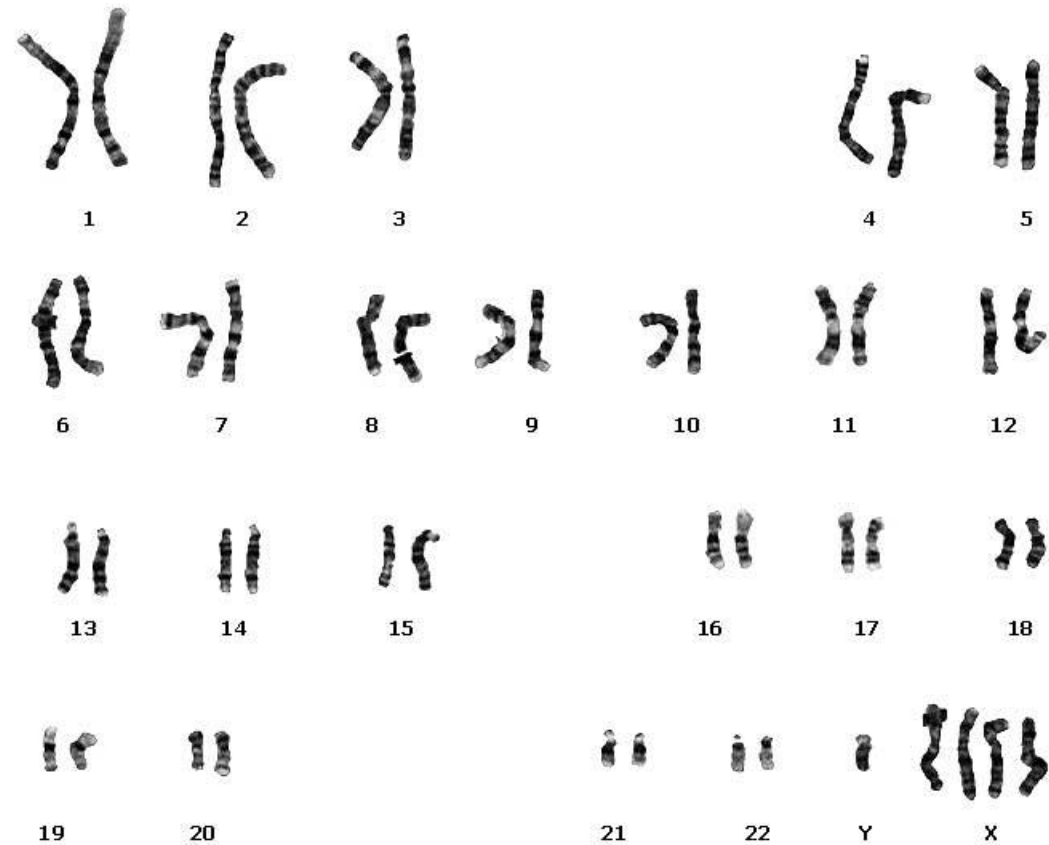
- Aneuploidy: incorrect # chromosomes
 - *Monosomy (1 copy) or Trisomy (3 copies)*
- Polyploidy: 2+ complete sets of chromosomes;
3n or 4n
 - *Rare in animals, frequent in plants*



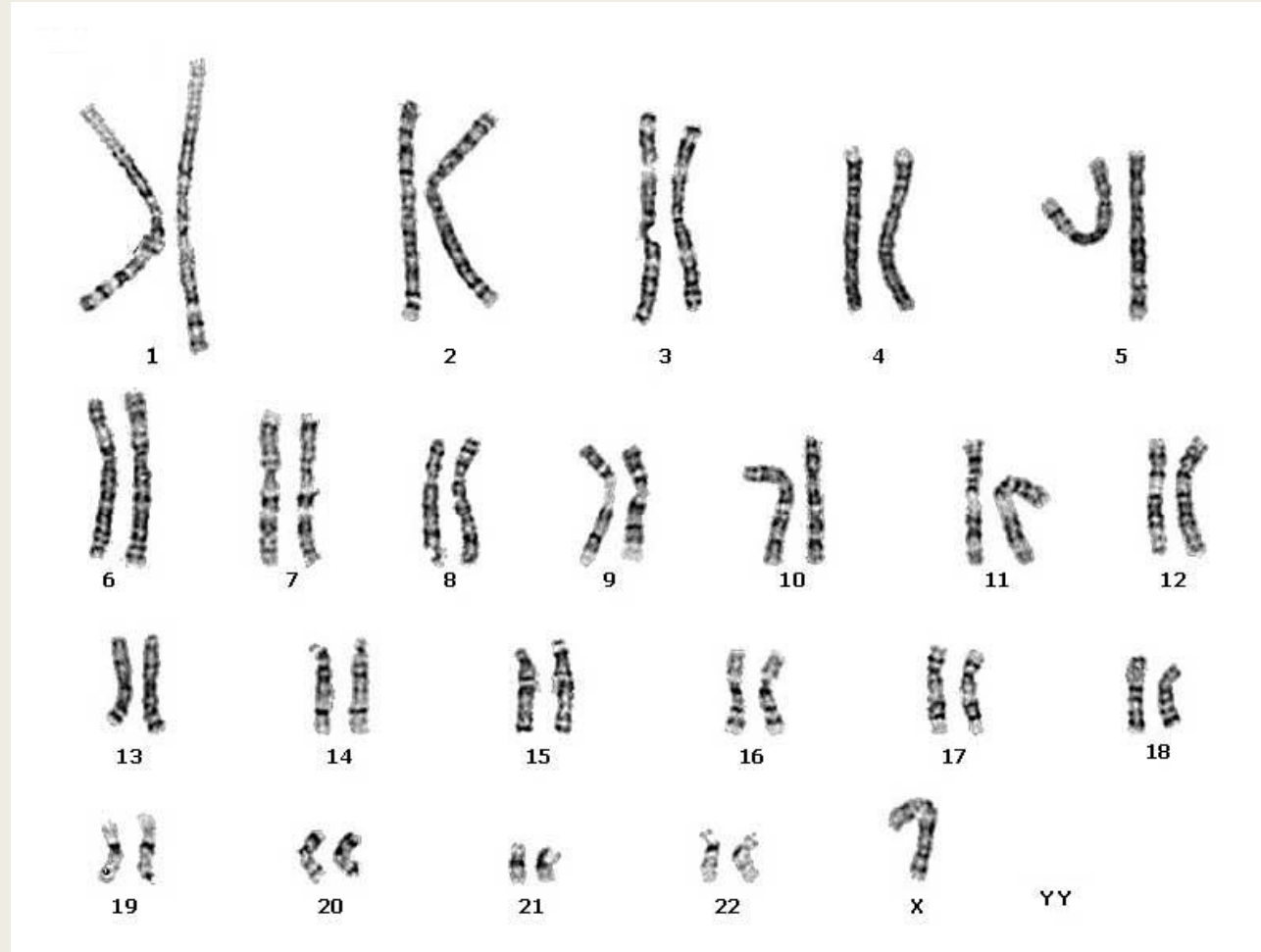
A tetraploid mammal. Scientists think this species may have arisen when an ancestor doubled its chromosome # by errors in mitosis or meiosis.

Nondisjunction

XXXXY, Klinefelter's Syndrome



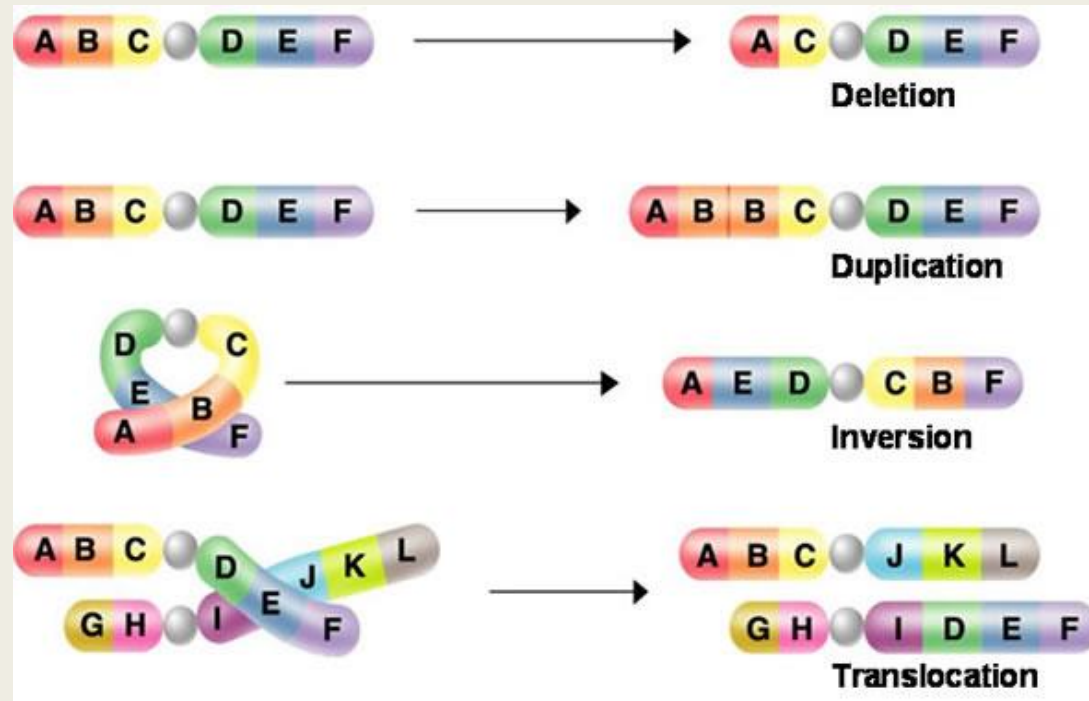
Nondisjunction



Chromosomal Mutations

Four types:

- 1) Deletion
- 2) Duplication
- 1) Inversion
- 1) Translocation



Chromosomal Mutations

(a) Deletion



A deletion removes a chromosomal segment.



(b) Duplication

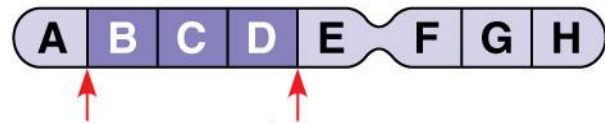


A duplication repeats a segment.



Chromosomal Mutations

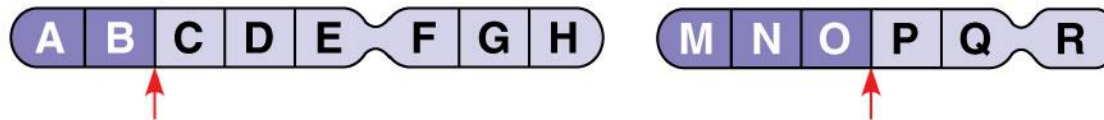
(c) Inversion



An inversion reverses a segment within a chromosome.



(d) Translocation



A translocation moves a segment from one chromosome to a nonhomologous chromosome.

